



Edd Clark & Associates, Inc.

Environmental Consultants

July 22, 2005

Job No.: 0306,001.98

Ms. Little Nash
252 San Ramon Way
Novato, CA 94945

Remedial Action Plan
Novato Ford
6995 Redwood Boulevard
Novato, California
UST File No.: 21-0326 (JMJ)

Dear Ms. Nash:

Please accept the following as Edd Clark & Associates, Inc.'s (EC&A's) Remedial Action Plan (RAP) for the remediation of fuel hydrocarbon (FHC) impacted soil and groundwater in the vicinity of the former underground storage tank (UST) for gasoline at 6995 Redwood Boulevard (site) in Novato, California (Figure 1). EC&A's April 30, 2004 *Feasibility Study/Corrective Action Plan* recommended ozone microsparging as the most cost-effective and technically feasible alternative that would achieve the remediation goals in an acceptable length of time. In their letter dated October 21, 2004, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) agreed with EC&A's recommendation and requested a detailed RAP addressing the design and installation of the ozone system and analyzing whether it is practical to also install a free-product removal system to accelerate the cleanup of the site. A copy of this RAP will be submitted to the SFBRWQCB for their review and approval, and to the Marin County Community Development Agency-Environmental Health Services (MCCDA-EHS) and Marin County Office of Waste Management (MCOWM) for their files.

SITE DESCRIPTION

The site is located at 6995 Redwood Boulevard in Novato, California; the nearest cross street is Hill Road (Figure 1). Redwood Boulevard is about 40 feet (ft) east of the site; businesses are located on the east side of Redwood Boulevard. An apartment complex is north of the site; to the northwest is a marsh; and directly to the west is a vacant lot and trailer-storage yard. Southwest and west of the site is WBE, an electric and telecommunications business; to the south is Hill Road and a car wash.

The Novato Ford automobile dealership is located at the site, and consists of paved parking areas, a sales building and service buildings. The former UST was located adjacent to the northwest corner

of the main service building (Figure 2). The ground surface in the location of the former UST slopes toward the west.

HYDROGEOLOGY

The site is located about 11 ft above mean sea level (MSL). The nearest drainage is a low-lying area, about 7 ft to 8 ft below the grade of the Novato Ford property, located about 150 ft north of the former UST. Although the outlet of this drainage is not apparent, it probably connects to the marshy area located to the northeast of the Novato Ford property. Novato Creek, which flows to the southeast, is approximately 300 ft northwest of the former UST at its closest point. In the vicinity of the site, Novato Creek is influenced by tidal fluctuations in San Pablo Bay, which is about 3 miles east of the site.

Groundwater-flow direction in the vicinity of the former UST is westerly. Evidence of tidal influence on groundwater-flow direction in the vicinity of the former UST was not observed based on multiple water-level measurements collected during low and high tides during the January and April 2000 sampling events.

Site Geology

Subsurface materials encountered by EC&A during the investigations conducted to-date consist of permeable fill comprised of baserock, clayey sand, clayey gravel and/or silty gravel to depths ranging from 3-ft to 12-ft bgs. Underlying the fill is Bay mud, which is mostly comprised of silty to sandy clay with thin silty-sand or gravelly-clay interbeds. Commonly, what appears to be perched water is encountered in the fill at the contact with the underlying clay. The sandy or gravelly lenses encountered within the Bay mud, which vary in thickness and continuity, are generally where first groundwater is encountered at depths ranging from 6 ft to 18 ft. Cross sections of the subsurface geology at the site are shown on Figures 3 through 5. Logs of all soil borings, monitoring wells and CPT borings to-date are in Appendix A.

The following borings contained materials that potentially may be appropriate for sparge point installations:

- In MW-1, gravelly clay was encountered at 15 ft bgs;
- In MW-2, a sand lens was encountered at 20 ft bgs;
- In MW-3, a gravel lens was encountered at 20-ft bgs;
- In B-1, clayey sand was encountered at 15-ft bgs;
- In B-2, silty-clay with sand was encountered at 12-ft bgs;
- In B-5, silty-clay with sand and gravel was encountered from 11- to 17-ft bgs;
- In B-6, silty-clay with sand and gravel was encountered from 11- to 17-ft bgs;
- In B-7, silty-clay with sand was encountered at 15-ft bgs;
- In B-9, silty sand was encountered at 15-ft bgs;
- In B-14, silty-clay with sand was encountered from 8- to 11.5-ft bgs.

The April 2003 subsurface investigation identified three water-producing zones (the shallow groundwater zone, and the A- and B-sands). CPT data suggests that the A-sand is comprised of a mixed sand package encountered at about 30 ft to 38 ft bgs, and extends down to approximately 40 ft bgs. The B-sand appears to be comprised of a mixed sand package encountered at about 42 ft to 46.5 ft bgs, and extends to the maximum depth explored, about 50 ft (Figures 3 and 4).

Groundwater

In the borings drilled to date, shallow groundwater was encountered in two zones: an apparently perched zone on the top of the Bay mud, and a shallow zone in thin silty sand bed(s) in the upper Bay mud. Depth to groundwater in open borings ranged from 1 ft to 14 ft.

DTW from TOC has ranged from approximately 5.09 ft (MW-2, April 2000) to 8.79 ft (MW-1, September 2002). Groundwater-flow direction has ranged from S58°W to N89°W.

REMEDIAL ACTION WORKPLAN

This workplan describes EC&A's proposed scope of work for the remediation of soil and groundwater at the site containing fuel hydrocarbons (FHCs). The proposed scope of work includes the installation of 12 Perozone™ sparge points and 6 standard ozone sparge points, ozone generator panels and associated equipment, operation and maintenance (O&M) of the ozone delivery system, installation of one deep monitoring well, preparation of a report of the installations, and continuation of quarterly groundwater monitoring. A free product recover unit will not be installed in well MW-4 at this time because EC&A anticipates that free product removal will be accomplished by the injection of Perozone™ in the sparge wells surrounding MW-4.

Twelve of the 18 sparge points will each have a specially designed Laminar Spargepoint®. In addition to ozone, these shallow sparge points inject a diluted hydrogen peroxide solution that coats the ozone microbubbles. The peroxide-coated ozone (Perozone™) is introduced into the soil and groundwater as a liquid that can more effectively oxidize the FHCs in the shallow zone. The hydrogen peroxide used in the system is a diluted (3% to 5%) solution made by mixing concentrated (30%), pharmaceutical-grade peroxide with filtered, deionized water. Kerfoot Technologies Inc. (KTI), the manufacturer of both systems, recommended the addition of peroxide to increase the radius of influence (ROI) in the shallow layer of tight fill and alluvium (clayey-gravel, sandy-clay and clayey-sand) that overlies the organic-clay Bay-mud deposits. Additionally, use of ozone alone in the shallow points would not generate an adequate ROI to effectively remediate the FHCs above the Bay mud.

Perozone™ has two benefits: it doubles the oxidation strength of ozone alone, and increases its oxidation potential (2.10 volts to 2.8 volts). The liquid peroxide coating weighs down the microbubbles, enhancing lateral flow and thereby increasing the ROI. With the use of Perozone™, KTI estimates that a 20-ft ROI can be achieved in the shallow zone. With Perozone™, peroxide

injection is minimal, usually 30 gallons/week at maximum. The displacement would be insignificant beyond a 3 ft radius of the injection point.

The following tasks describe the activities to be performed in implementing this RAP.

Task 1 - Project Management, Client and Agency Communications

This task includes administrative services, scheduling, client, regulatory agency and subcontractor communications and meetings, and project planning.

Task 2 - Permitting and Utility Location

Drilling and sampling in Marin County requires a permit from the MCCDA-EHS. This task includes preparation and submittal of permit applications, communications with agency representatives and payment of the permit fees. In order to avoid drilling or excavating into any underground utilities that underlie private property, a private underground-utility-locator service will be employed to clear the boring locations. Underground Service Alert and the SFBRWQCB will be notified prior to drilling and excavating.

Task 3 - Sparge Well/Sparge Point Installation

Sparge Well Soil Boring Installation

EC&A will drill 18 sparge well soil borings (SP-1 through SP-18) and install 18 sparge points in these borings. The sparge points will be completed in the deepest permeable unit encountered between 10- and 24-ft below ground surface (bgs). Experience with other ozone systems has shown that attempting to inject ozone into clay is not effective and may cause serious maintenance problems including short-circuiting of the ozone directly to the ground surface through the sparge-well boring. If a permeable unit is not present in the appropriate depth range in the planned sparge-well location, the well will not be installed. The geology in the area of the sparge well locations are shown on Figures 3 through 5; logs of all soil borings drilled to date are included in Appendix A.

The borings will be drilled with a truck-mounted drill rig equipped with 6-inch O.D. hollow-stem augers at the locations shown on Figure 6. Drilling will be performed under the technical direction of an EC&A field geologist who will classify the soils encountered, maintain a continuous log of the lithology and assist with collection of soil samples. All field work will be performed under the supervision of a California-registered Geologist. EC&A personnel will field screen the breathing zone and soil samples for organic vapors with a photo ionization detector (PID). Soil samples will be collected for field screening and logging only.

Soil Sample Collection

Soil samples will be collected using a 3-inch outside-diameter (OD) split-spoon sampling apparatus. The borings will be continuously sampled from 10-ft bgs to 24-ft bgs. Brass tubes will not be used for sample collection. When the boring has been advanced to the selected sampling depth, the sampler will be lowered into the bottom of the hole and driven approximately 24 inches into relatively undisturbed soil ahead of the auger using a 140-pound, drill-rig operated hammer. Soil samples will be used for logging purposes only and will not be submitted for laboratory analyses.

Groundwater Sample Collection

One grab-groundwater sample will be collected from each boring by lowering a clean, new disposable bailer into the borehole. The groundwater samples will be transferred from the bailers into laboratory-supplied, sterile sample containers, logged on a chain-of-custody document, placed on ice and transported to a State-certified laboratory for chemical analyses. The samples will be analyzed for total petroleum hydrocarbons (TPH) as gasoline (g) and benzene, toluene, ethylbenzene and xylenes (BTEX) using Methods SW8021B/8015Cm, and for methyl tert-butyl ether (MTBE) and other gasoline oxygenates by Method SW8260B.

Equipment Decontamination and Waste Storage

In order to minimize the possibility of cross contamination, all down-hole drilling and sampling equipment will be decontaminated prior to use. Down-hole drilling equipment will be pressure washed between borings. Sampling equipment will be washed in a low-phosphorous soap solution and double rinsed with tap water before samples are collected. Soil from the borings and water from equipment decontamination will be placed in properly labeled DOT 17-H 55-gallon drums.

Sparge Well Construction

Following completion of the borings, they will be converted to sparge wells as described below. The sparge points in sparge wells SP-3 through SP-8, SP-11 through SP-14, SP-16 and SP-17 will be Laminar Spargepoints®; the sparge points in sparge wells SP-1, SP-2, SP-9, SP-10, SP-15 and SP-18 will be standard ozone sparge points. All of the sparge points will be installed at about 12-ft to 24-ft bgs depending on the depth to an appropriate permeable layer.

A bed of at least 6 inches of fine-grained sand (sugar sand) will be placed at the bottom of each borehole, followed by a 30-inch-long by 2-inch-diameter sparge point affixed to ¾-inch, flush-threaded PVC riser. The PVC riser extends from the top of each sparge point to about ½ ft bgs. In the annular space between the borehole wall and sparge point, the sand will be placed to about 3 ft to 5 ft above the top of each sparge point. Bentonite chips will be placed above the sand to 2.5-ft below grade and hydrated.

The top 2.5-ft of each boring will be backfilled with cement grout to 6-inches below grade. A traffic-rated well box, at least 12 inches in diameter, will be installed and set in concrete to protect the top of each sparge well. Each sparge well will be isolated from the rest of the system by a one-way check valve in the well box. Typical sparge well construction details are shown on Figure 7.

Task 4 - Sparge Panel Installations

One 12-point KVA Perozone™ panel equipped with a compressor upgrade, ozone upgrade and oxygen booster unit, and one 6-point KVA C-Sparger™ panel equipped with a compressor upgrade, oxygen booster and ozone upgrade will be installed near the sparge points at a location specified by the site owners. The panels will be wired to existing or new 110-volt electrical outlets. The 12-point Perozone™ panel will be connected to sparge points SP-3 through SP-8, SP-11 through SP-14, SP-16 and SP-17. The 6-point C-Sparger™ panel will be connected to sparge points SP-1, SP-2, SP-9, SP-10, SP-15 and SP-18. The panels will include air compressor, ozone generator, oxygen booster,

sequencer, solenoids, dual cooling fans, run timer, outflow one-way check valves, high-temperature sensor, and shutdown. The panel units are relatively small and unobtrusive at approximately 3-ft tall, 2-ft wide and 1-ft deep. An approximately 35-gallon drum containing hydrogen peroxide will be plumbed to the Perozone™ panel. Both panels will be inside of an enclosure to protect the equipment.

Double-contained, small-diameter, inter-connective polyethylene tubing (3/8-inch and 7/8-inch diameter) will be installed in conduit piping in trenches from each of the sparge points to the panel. Each sparge well will be isolated from the rest of the system by a one-way check valve in the well box (Figure 7).

Task 5 - Operation and Maintenance

The system will be started up no later in the week than a Wednesday so that the panel can be inspected for the first three consecutive days of operation. Upon startup, the system will be checked for leaks by applying a soap and water solution to system components and plumbing connections and monitoring for bubbles or other evidence of leakage. Additionally, the ozone generator panel and sparge well heads will be checked with an ozone meter capable of detecting ozone to 0.01 parts per million (ppm). The system will be checked daily for three days following system startup, once per week for the next month, and monthly thereafter to ensure that ozone injection is in progress and the system is functioning properly.

Prior to system operation, baseline dissolved oxygen (DO) concentrations and oxidation-reduction potential (ORP) will be measured with field meters in monitoring wells MW-1, MW-2, MW-3 and MW-4 and recorded on the daily field record. Pre- and post-purging DO and ORP measurements will be recorded. DO concentrations will be measured at each monthly operation and maintenance (O&M) visit, and DO and ORP concentrations will be measured during groundwater monitoring events to ensure that the ozone delivery system is operating properly and ozone and oxygen are being dispersed into the targeted water-bearing zone. For monthly visits, the DO measurements will be taken without purging the monitoring wells; during quarterly sampling events, DO and ORP measurements will be taken before and after the monitoring wells are purged. During O&M visits, the well risers, junctures and accessible plumbing and system components will be checked for leaks. O&M visits will be combined with quarterly sampling when possible.

Task 6 - Deep Monitoring Well Installation

Deep monitoring well MW-5 will be completed in the A sand near the location of CPT-2, which had the highest concentration of MTBE (180 µg/l) reported from the deep sand bodies. This well will be used to monitor water quality in the A sand layer. If water quality in the deep sand fails to improve after cleanup of the source material, the need for additional sparge points in the deep sand beds will be addressed.

The deep-well boring will be advanced with a truck-mounted drill rig equipped with 12-inch-diameter, solid-flight augers. The boring will be advanced to 20 ft bgs (i.e., about 3 ft below a thin silty-sand layer that was identified in the CPT log; see Figure 3). Approximately 2 ft of bentonite

chips will be added at the bottom of the borehole. A 9-inch-diameter steel conductor casing will then be inserted into the borehole and pushed through the bentonite plug to approximately 25 ft bgs. The annular space between the borehole and casing will be tremie grouted to approximately 10 ft bgs; the remainder of the annular space will be filled with grout from the top. At least 24 hours after the casing has been grouted, the well boring will be advanced beyond the conductor casing to 40 ft bgs using 7-inch-diameter, hollow-stem augers lowered through the conductor casing.

The boring will be converted to a groundwater monitoring well by inserting a 2-inch-diameter, flush-threaded Schedule 40 PVC well casing from the ground surface to the bottom of the boring. The casing will consist of machine-slotted well screen from approximately 30 ft to 40 ft bgs. The precise depth of the screen will depend on conditions encountered in the boring. The remainder of the well will consist of solid PVC casing. A typical deep monitoring-well construction diagram is attached (Figure 8).

The size of the filter pack and well screen slot size will be based on the size and type of the material encountered in the saturated zone. EC&A anticipates that the filter pack in the wells will consist of clean water-washed Monterey #2/12 sand or equivalent and the screen slot size will be 0.010 inches. The sand will be placed through the hollow-stem augers into the annular space between the well casing and the borehole wall. The augers will be raised periodically and an auger flight removed to allow the sand to fill the annulus between the casing and the borehole wall. The sand pack will extend from the bottom of the well bore to approximately 1 ft above the screened interval. An approximately 1-ft- to 2-ft-thick layer of bentonite will be placed above the filter pack and hydrated with tap water in 1-ft lifts. The remaining annular space will be backfilled with cement/bentonite grout.

The well will be completed by installing a water-tight utility box with tamper-deterrent bolts set at grade in concrete, a locking well cap, and a label with the well I.D. The boxes will be footed in cement/bentonite grout for security and stability.

Task 7 - Continued Groundwater Monitoring

To better monitor groundwater conditions and FHC concentrations, and evaluate the effectiveness of the remediation system during initial ozone microsparging at the site, groundwater samples from the existing monitoring wells and new deep well MW-5 will be collected monthly for the first six months of operation. The additional groundwater-quality data will be used to adjust the programming for the ozone system. After six months, quarterly monitoring of all site wells will continue for at least two years. Based on the groundwater analytical results, the groundwater monitoring program may be modified with the approval of the SFBRWQCB.

During each sampling event, the groundwater level in each well will be measured to the nearest 0.01 ft with an electronic water-level meter, and the temperature, pH, DO and ORP readings will be recorded. A minimum of three well-casing volumes of groundwater will be removed from each well with a submersible pump before sampling. Water pH, temperature, and electric conductivity will be recorded during purging at intervals of approximately one casing volume. A water sample will

be collected after water parameters have stabilized and the water level returned to a minimum of 80% of the initially recorded water level.

Groundwater samples will be collected in new Voss single-sample disposable bailers fitted with a disposable bottom-emptying device to minimize water degassing for samples analyzed for volatile chemical constituents. The samples will be transferred to properly labeled, laboratory-supplied sterile sample containers, logged on a chain-of-custody form, and placed on ice for immediate transport to a State-certified laboratory. A field log presenting water parameter measurements, purge volumes, field measurements, and well-construction details will be recorded for each well sampled.

Groundwater samples will be analyzed by a State-certified laboratory for TPHg and BTEX using Methods SW8021B/8015Cm, and for MTBE and other gasoline oxygenates by Method SW8260B. Sample results and water-level measurements will be electronically submitted to the State GeoTracker Internet Database in accordance with State Water Resources Control Board requirements.

Task 8 - Report Preparation

EC&A will prepare a report of the ozone system installation that will include details of the sparge well installation, grab-groundwater sample analytical results, the trenching and plumbing network, master panel installation, and system startup. Subsequent reports will be submitted following each quarterly sampling event, and will include monthly analytical results, O&M data, DO and ORP measurements, groundwater flow direction and gradient calculations, and analytical results. Reports will be submitted to the SFBRWQCB and the MCOWM for their review.

SITE SAFETY PLAN

The attached Site Safety Plan identifies the chemicals and other potential safety hazards that may be encountered, describes precautionary measures to be taken when in the presence of these chemicals and other potential safety hazards, and contains a map to the nearest medical facility (Appendix B).

SCHEDULE

Site work will be scheduled as soon as possible following receipt of RAP approval from the SFBRWQCB and the required permits. EC&A anticipates that the sparge wells will be installed by the end of September 2005 and the ozone system will be installed and activated by the end of November 2005.

Thank you for allowing EC&A to provide environmental services for you. Please call if you have any questions.

Sincerely,

July 21, 2005

Job No.: 0306,001.98

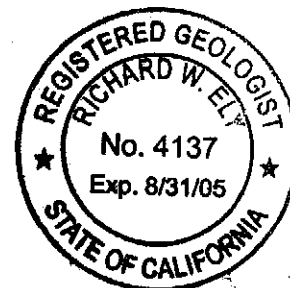
Edd Clark & Associates, Inc.

John Calomiris

John Calomiris
Technical Operations Manager

Richard W. Ely

Richard W. Ely R.G. #4137
Senior Geologist

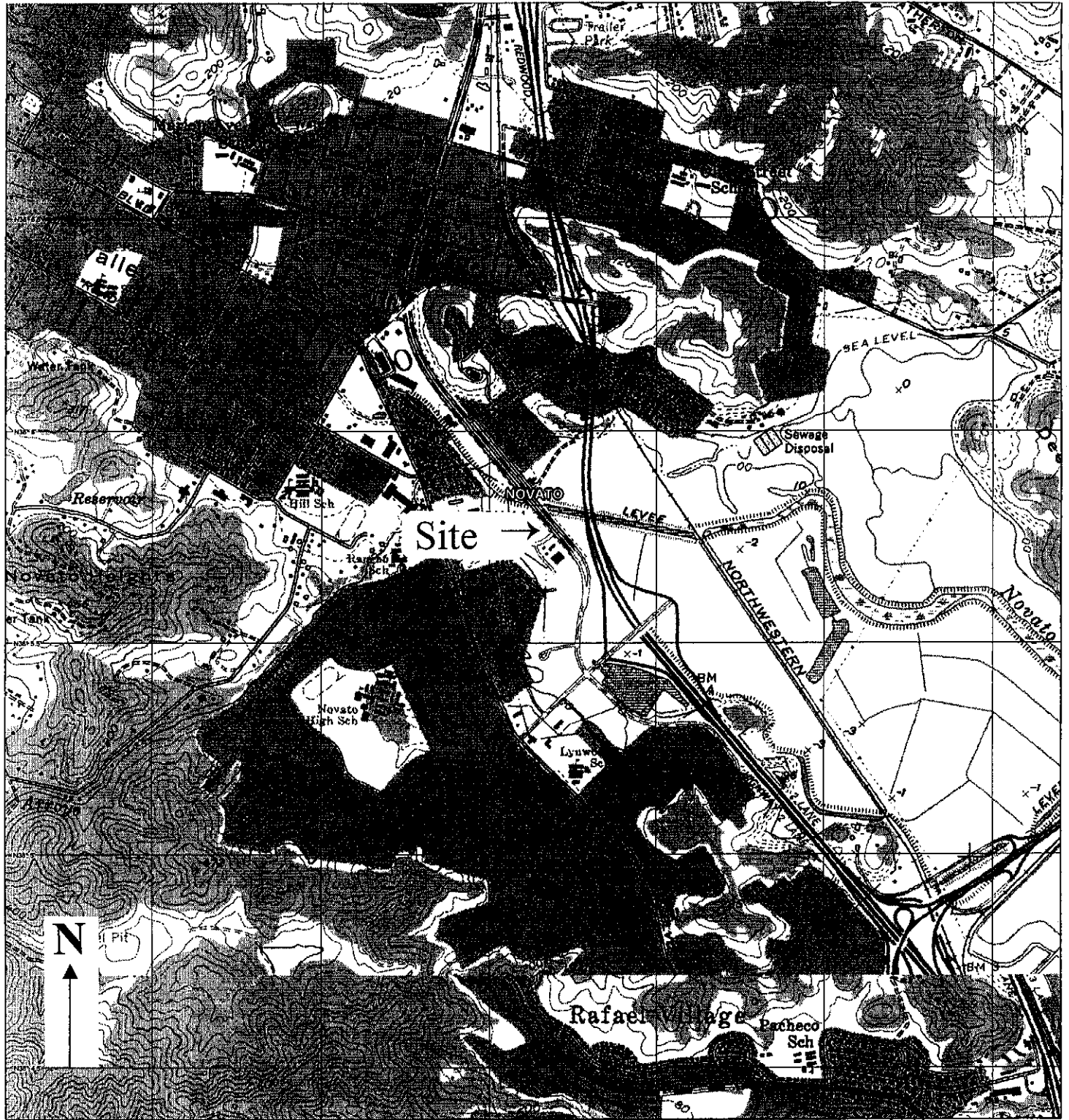


Attachments: Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Cross Section A-A'
Figure 4 - Cross Section B-B'
Figure 5 - Legend for Geologic Cross Sections
Figure 6 - Sparge Point Locations
Figure 7 - Typical Sparge Well Construction Diagrams
Figure 8 - Typical Deep Monitoring Well Construction Diagram

Appendix A - Boring Logs
Appendix B - Site Safety Plan

cc: John Jang, San Francisco Bay Regional Water Quality Control Board
Tim Underwood, Marin County Office of Waste Management
Armando Alegriz, Marin County Community Development Agency-Environmental Health Services

0306\ozone RAP



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 990 ft Scale: 1 : 24,000

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Site Location Map
Novato Ford
6995 Redwood Boulevard
Novato, CA

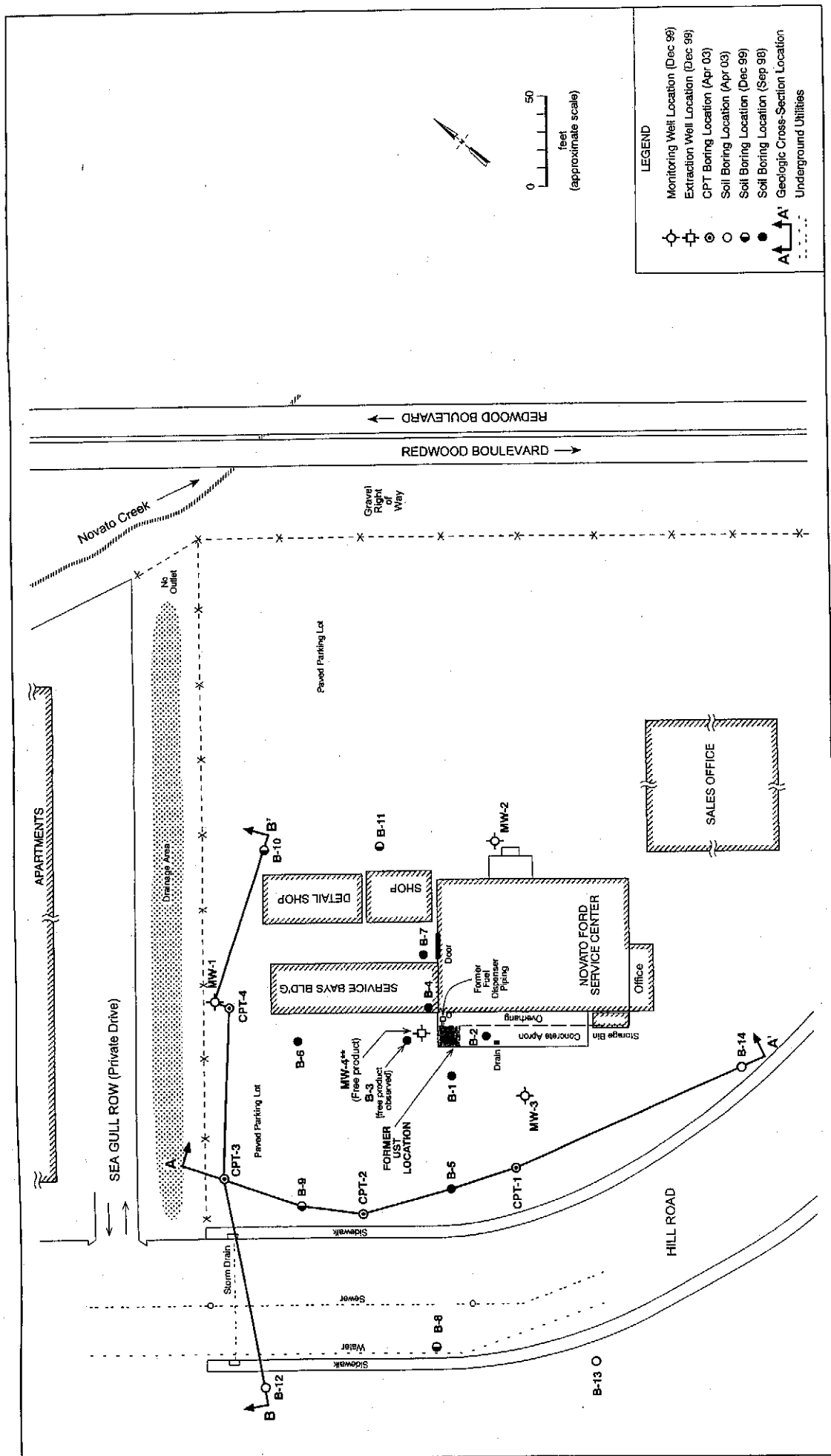
FIGURE
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REVIEWED BY:
Lori Brown

DATE:
March 2003

REVISED DATE:



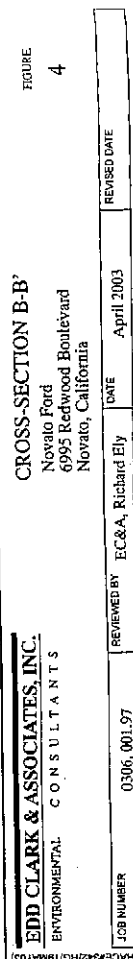
SITE MAP

Novato Ford
6995 Redwood Boulevard
Novato, California

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FIGURE 2

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Novalto Ford

6995 Redwood Boulevard

Novato, California

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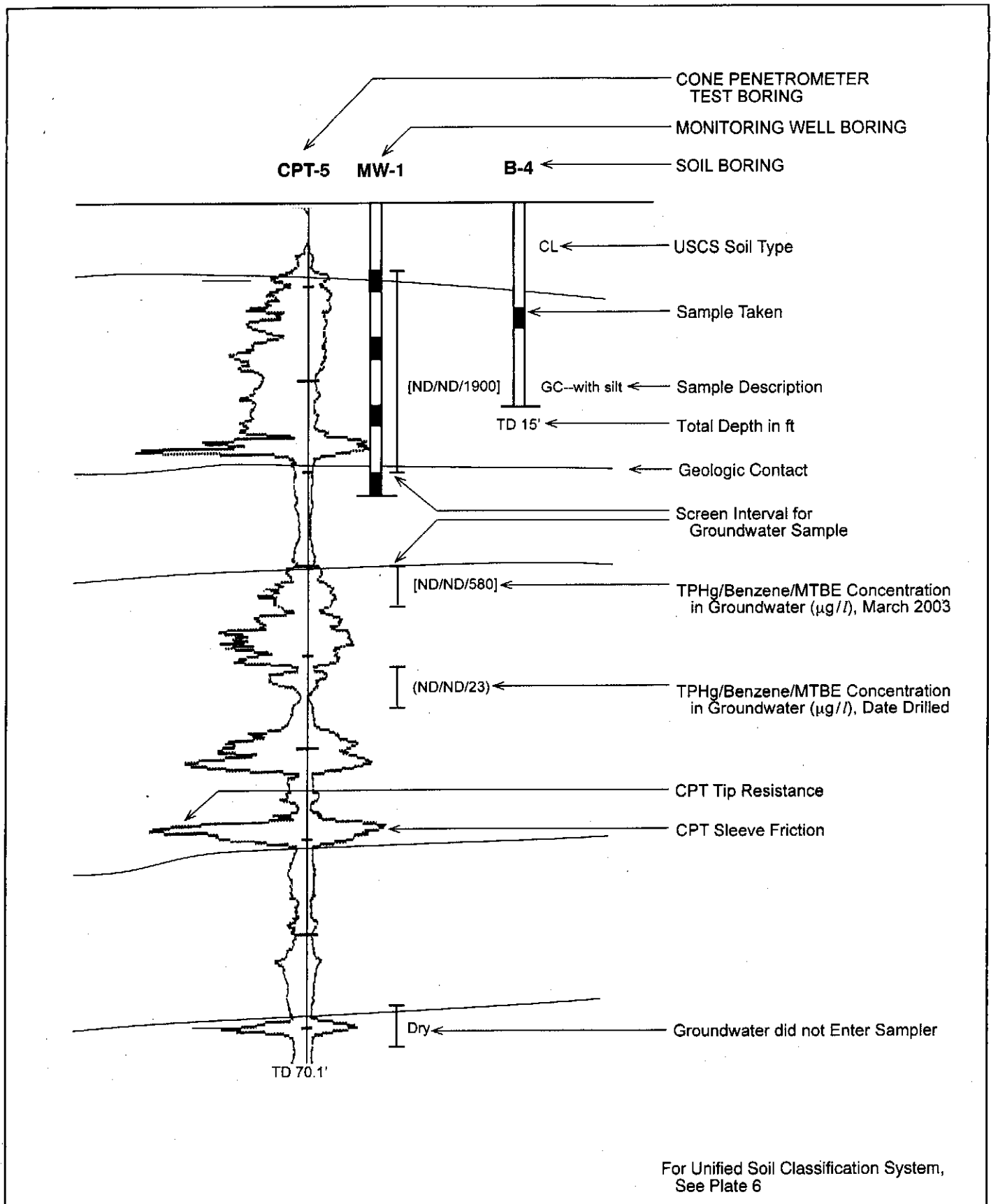
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REV	DATE	DESCRIPTION
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2	01/01/02	Revised
3	01/01/03	Revised
4	01/01/04	Revised
5	01/01/05	Revised
6	01/01/06	Revised
7	01/01/07	Revised
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HALC#342HG (18MAT03)

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Horizontal Scale (feet);
Vertical Exaggeration = 2X



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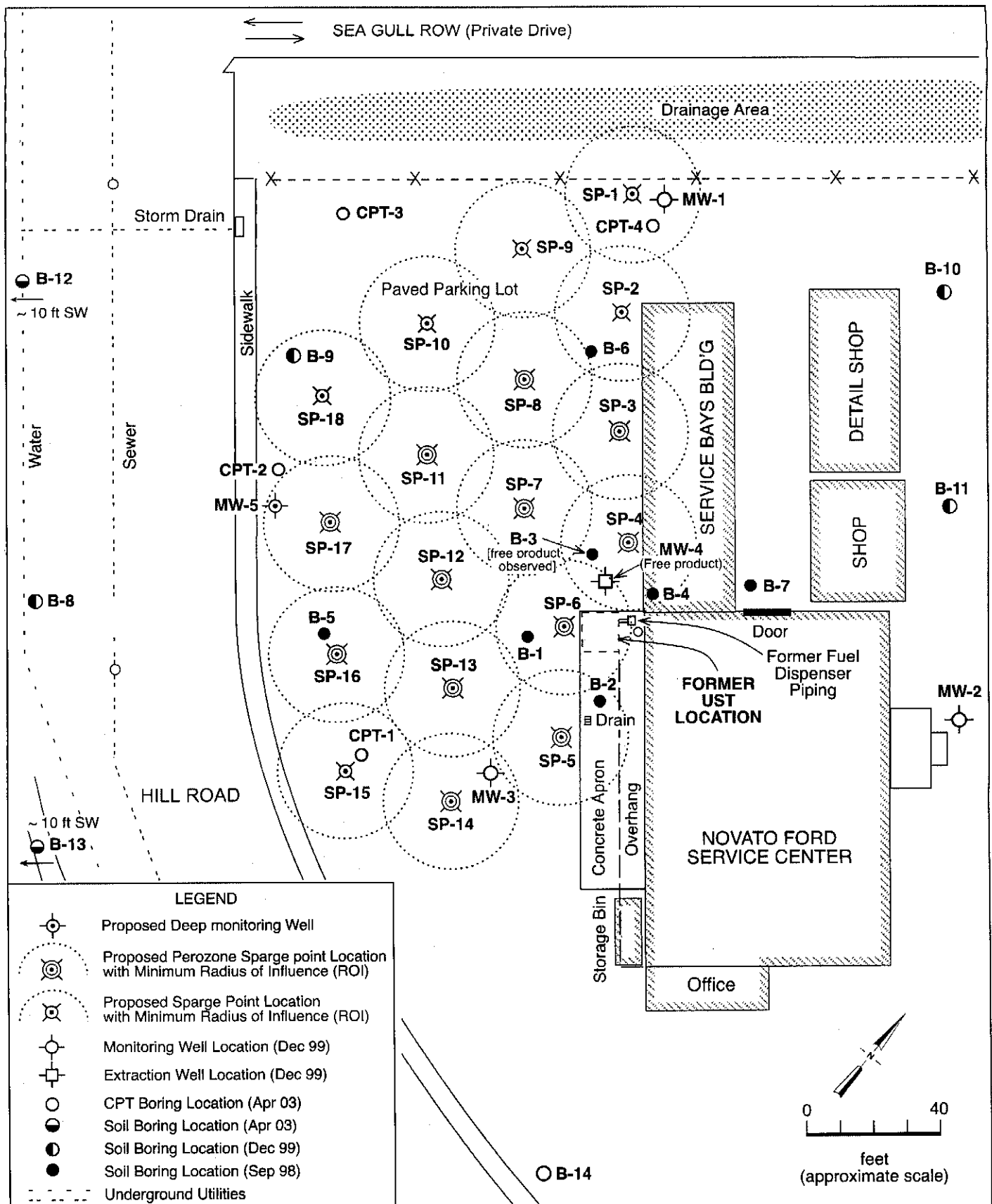
LEGEND FOR GEOLOGIC CROSS SECTIONS

Novato Ford
6995 Redwood Boulevard
Novato, California

FIGURE

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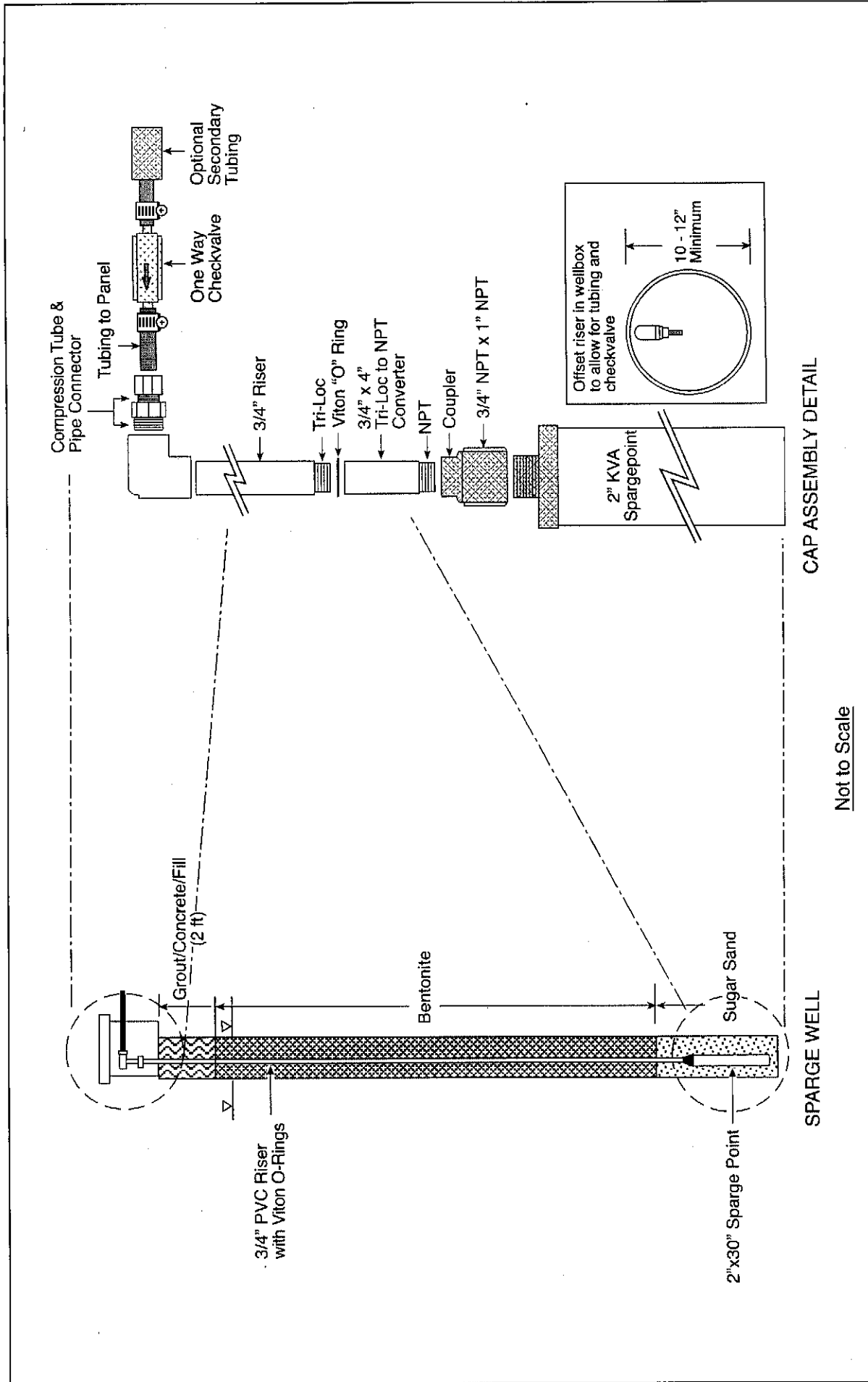


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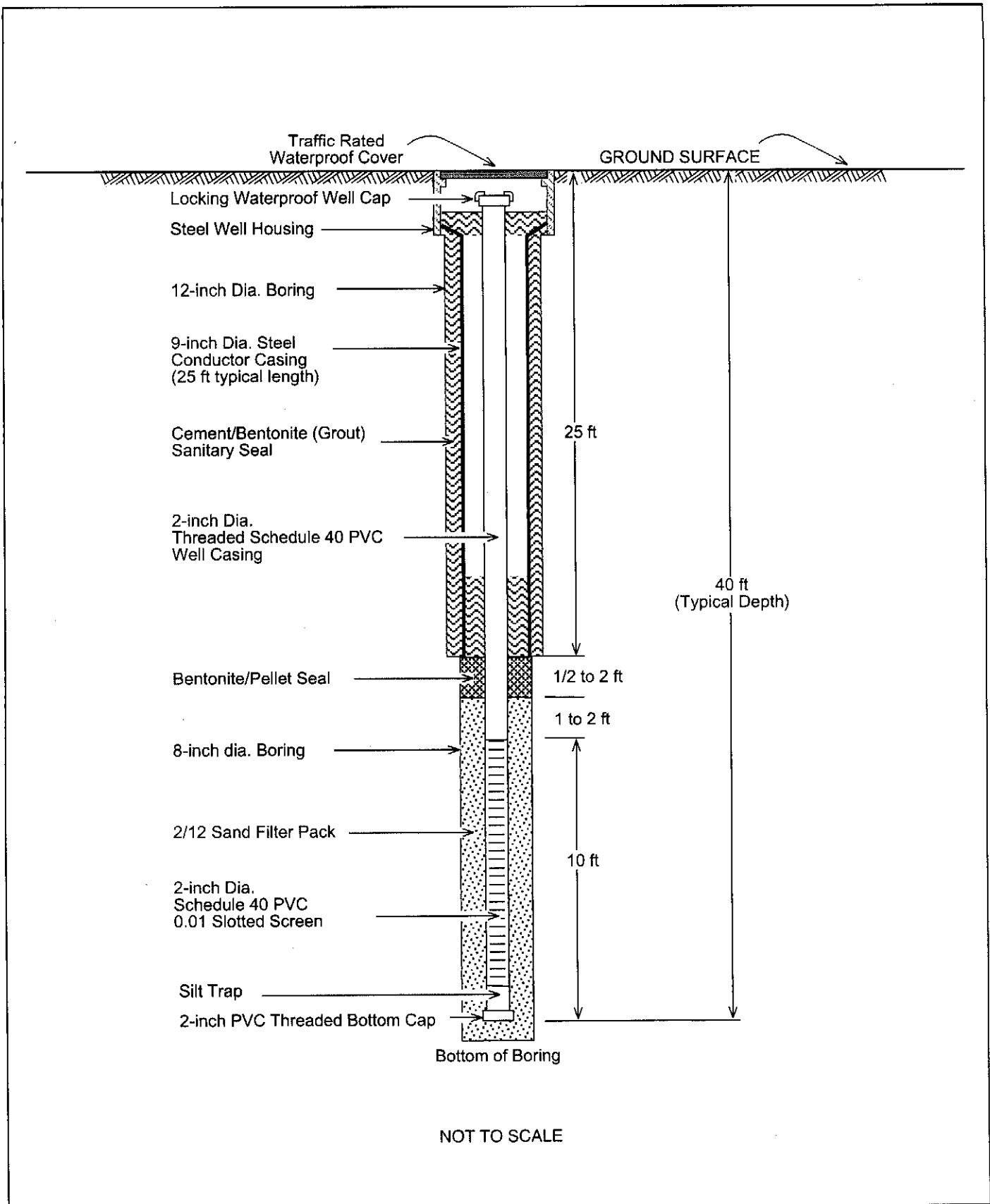
TYPICAL SPARGE POINT CONSTRUCTION DIAGRAM

Novato Ford
 6995 Redwood Boulevard
 Novato, California

FIGURE

7

JOB NUMBER	0306, 001.98	REVIEWED BY	EC&A, Richard Ely	DATE	July 2005	REVISED DATE
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TYPICAL DEEP MONITORING WELL CONSTRUCTION DIAGRAM

Novato Ford
6995 Redwood Boulevard
Novato, California

FIGURE

8

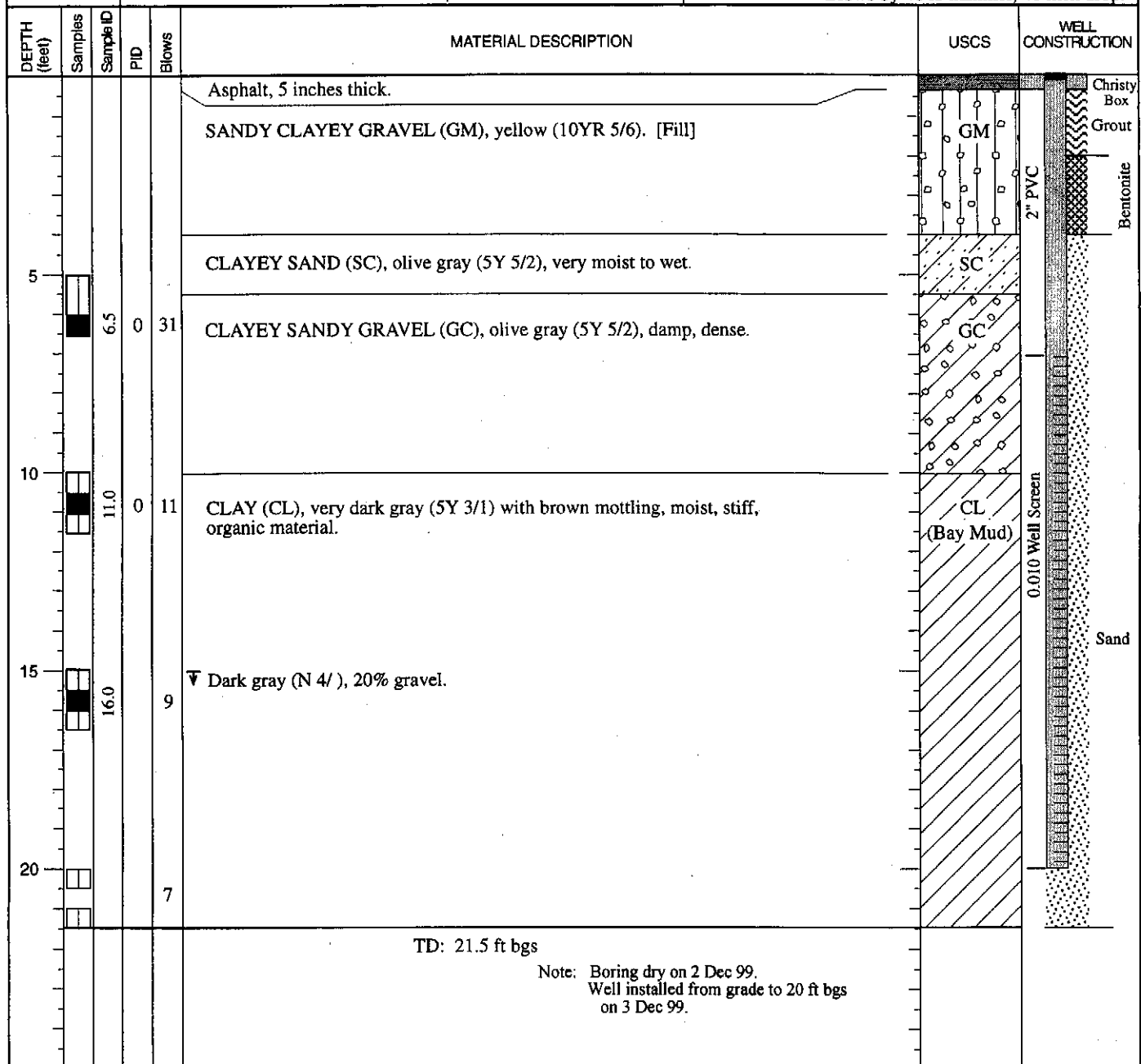
JOB NUMBER	0306, 001.98	REVIEWED BY	EC&A, Richard Ely	DATE	July 2005	REVISED DATE
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(TRACE #342/RG/20JUL05)

APPENDIX A

Boring Logs

BORING LOCATION			6995 Redwood Blvd. (north of former UST next to fence)		ELEVATION AND DATUM		BORING NO.		
					10.87 ft TOC		MW-1		
DRILLING AGENCY		Clear Heart, LLC		DRILLER		Don		DATE STARTED	
								2 Dec 99	
DATE FINISHED								3 Dec 99	
DRILLING EQUIPMENT			DR 10K Truck-mounted Drill Rig			COMPLETION DEPTH		21.5 ft	
								SAMPLER	
								CA Modified Split Spoon	
DRILLING METHOD			Hollow Stem Auger			BORING DIA.		8 inch O.D.	
								NO. OF SAMPLES	
								4 Soil	
SIZE AND TYPE OF CASING			2-inch PVC			FROM		0.0' TO 20.0'	
						WATER LEVEL		FIRST	
						None		None	
TYPE OF PERFORATION			0.01 Slotted			FROM		5.0' TO 20.0'	
						CORE BARREL		2.5"/1.5" Ø	
								LENGTH	
								18 inches	
SIZE AND TYPE OF PACK			#2/12 Sand			FROM		4.0' TO 21.5'	
						LOGGED BY:		JC	
								CHECKED BY:	
								CYP	
TYPE OF SEAL	NO. 1	Bentonite	FROM			2.0' TO 4.0'		COMMENTS	
	NO. 2	Cement Grout	FROM			0.0' TO 2.0'			
								Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	



(TRACE #179/RG/9Mar00)

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LOG OF MONITORING WELL MW-1
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE
8

JOB NUMBER 0306,001.97	REVIEWED BY EC&A, Cheri Page	DATE February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd. (east side of service bldg near stairs)				ELEVATION AND DATUM 10.96 ft TOC		BORING NO. MW-2		
DRILLING AGENCY Clear Heart, LLC		DRILLER Don		DATE STARTED 3 Dec 99		DATE FINISHED 3 Dec 99		
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig				COMPLETION DEPTH 21.5 ft		SAMPLER Modif. Split Spoon & Pin		
DRILLING METHOD Hollow Stem Auger		BORING DIA. 8 inch O.D.		NO. OF SAMPLES 3 Soil				
SIZE AND TYPE OF CASING 2-inch PVC		FROM 0.0' TO 20.0'		WATER LEVEL 10 ft		MEASURED / SAMPLED None/None		
TYPE OF PERFORATION 0.01 Slotted		FROM 5.0' TO 20.0'		CORE BARREL 2.5"/1.5" φ		LENGTH 18 inches		
SIZE AND TYPE OF PACK #2/12 Sand		FROM 4.0' TO 21.5'		LOGGED BY: JC		CHECKED BY: CYP		
TYPE OF SEAL		NO. 1 Bentonite		COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.				
		NO. 2 Cement Grout						
DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION		USCS	WELL CONSTRUCTION
					Asphalt, 3 inches thick.			
					SANDY CLAYEY GRAVEL (GC), yellowish brown (10YR 5/6), moist. [Fill]		GC	Christy Box
					CLAYEY GRAVEL (GC), light olive brown (2.5Y 5/4), damp, very dense, 50% gravel 30% clay, 20% fine-grained sand; appears to be fill.		GC	Grout
5		6.0	0	75	Olive gray (5Y 5/2), wet.			Bentonite
					CLAY (CL), very dark gray (5Y 5/2), moist, stiff, organic material.		CL (Bay Mud)	
10		11.0	0	8				
15		16.0	0	5				
20			0	4	Lens of coarse-grained sand (pin sampler), 2 inches thick.			Sand
					TD: 21.5 ft bgs			
					Note: Well installed from grade to 20 ft bgs.			

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LOG OF MONITORING WELL MW-2
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

9

JOB NUMBER	0306,001.97	REVIEWED BY	EC&A, Cheri Page	DATE	February 2000	REVISED		SHEET NO.	1 of 1
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BORING LOCATION 6995 Redwood Blvd. (south of former UST)		ELEVATION AND DATUM 10.90 ft TOC		BORING NO. MW-3	
DRILLING AGENCY Clear Heart, LLC		DRILLER Don		DATE STARTED 3 Dec 99	DATE FINISHED 3 Dec 99
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig		COMPLETION DEPTH 21.5 ft		SAMPLER Modif. Split Spoon & Pin	
DRILLING METHOD Hollow Stem Auger		BORING DIA. 8 inch O.D.		NO. OF SAMPLES 2 Soil	
SIZE AND TYPE OF CASING 2-inch PVC		FROM 0.0' TO 20.0'		WATER LEVEL None	FIRST / SAMPLED None/None
TYPE OF PERFORATION 0.01 Slotted		FROM 5.0' TO 20.0'		CORE BARREL 2.5"/1.5" Ø	LENGTH 18 inches
SIZE AND TYPE OF PACK #2/12 Sand		FROM 4.0' TO 21.5'		LOGGED BY: JC	CHECKED BY: CYP
TYPE OF SEAL	NO. 1	Bentonite	FROM 2.0' TO 4.0'	COMMENTS Soil samples field screened with Photo-ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
	NO. 2	Cement Grout	FROM 0.0' TO 2.0'		

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt, two 3-inch layers, pieces of concrete.		Christy Box
					CLAYEY GRAVEL (GC), dark yellowish brown (10YR 4/6), moist; appears to be fill.	GC	Grout
					▽ Light olive gray (5Y 5/2), increasing gravel, less clay.		Bentonite
5			0	30	Note: No recovery.		
			0		SANDY CLAY (CL), olive gray (2.5Y 5/2), moist, 60% clay, 30% fine-grained sand, 10% gravel.	CL	
10		11.0	4		SILTY CLAY (CL), dark gray (N4 /) with black mottling, wet, soft; organic material.	CL (Bay Mud)	0.010 Well Screen
15		16.0	5		▽ Stiff, moist, boring dry at 15 ft.		Sand
20			5		▽ Gravel Lens, wet (pin sampler).		
TD: 21.5 ft bgs							
Note: Well installed from grade to 20 ft bgs.							

(TRACE #178/RG/9Mar00)

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LOG OF MONITORING WELL MW-3

 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

10

JOB NUMBER 0306,001.97	REVIEWED BY EC&A, Cheri Page	DATE February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd. (between former UST and boring B-3)				ELEVATION AND DATUM Ground level		BORING NO. MW-4	
DRILLING AGENCY Clear Heart, LLC		DRILLER Don		DATE STARTED DATE FINISHED		10 Dec 99 → 10 Dec 99	
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig				COMPLETION DEPTH 16.5 ft		SAMPLER Modif. Split Spoon & Pin	
DRILLING METHOD Hollow Stem Auger		BORING DIA. 11 inch O.D.		NO. OF SAMPLES 3 Soil			
SIZE AND TYPE OF CASING 4-inch PVC		FROM 0.0' TO 16.5'		WATER LEVEL FIRST 10 ft bgs ?		MEASURED / SAMPLED None/None	
TYPE OF PERFORATION 0.02 Circumslot™		FROM 3.5' TO 16.5'		CORE BARREL 2.5" φ		LENGTH 18 inches	
SIZE AND TYPE OF PACK #2/12 Sand		FROM 3.0' TO 16.5'		LOGGED BY: JC		CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 Bentonite		FROM 2.0' TO 3.0'		COMMENTS Soil samples field screened with Photo-ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
		NO. 2 Cement Grout		FROM 0.0' TO 2.0'			

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
0					Asphalt, 3-1/2 inches, 4 inches of concrete.		Christy Box Grout
5		6.0	0	30	CLAYEY SANDY GRAVEL (GM), light olive brown (2.5Y 5/4), damp, rocks up to 2-1/2 inches. [Fill]	GM	4" PVC
10		11.0	10% LCL	10	GRAVELLY CLAY (CL), dark grayish brown (2.5Y 4/2), moist, very stiff, 60% clay, 40% gravel. ▽ Dark gray (5Y 4/1). Note: 10% LEL in cuttings.	CL	0.020 Well Screen
15		16.0	5	7	SILTY CLAY (CL), black (5Y 2.5/) with brown mottling, dry, organic material; strong hydrocarbon odor. Note: Boring dry, but at 10 ft drill bit wet.	CL (Bay Mud)	
20					TD: 16.5 ft bgs Note: Well constructed in boring to 16.5 ft bgs.		

(TRACE #176/RG/9/Mar00)

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LOG OF MONITORING WELL MW-4
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

11

JOB NUMBER	0306,001.97	REVIEWED BY	EC&A, Cheri Page	DATE	February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (15 ft west of former UST)				ELEVATION AND DATUM Ground Surface		BORING NO. B-1	
DRILLING AGENCY Clear Heart Drilling, LLC		DRILLER Ian		DATE STARTED 9 Nov 98		DATE FINISHED 9 Nov 98	
DRILLING EQUIPMENT DR 10K Truck mounted rig				COMPLETION DEPTH 17.0'		SAMPLER Split Spoon	
DRILLING METHOD Direct Push		BORING DIA. 2 inches		NO. OF SAMPLES 4 Soil + 1 Grab Groundwater			
SIZE AND TYPE OF CASING —NA—		FROM — TO —		WATER LEVEL FIRST 5' and 14' bgs		BEFORE SAMPLE 4.4' bgs	
TYPE OF PERFORATION —NA—		FROM — TO —		CORE BARREL 2.0 inch ϕ		LENGTH 18 or 24 inches	
SIZE AND TYPE OF PACK —NA—		FROM — TO —		LOGGED BY: JC		CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 —NA—		FROM — TO —		COMMENTS Soil samples field screened with GasTechtor Combustion Meter (GT). Results reported in parts per million (ppm).	
		NO. 2 —NA—		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	GT	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt - 2 inches, Base rock fill - 6 inches		
					Clayey SAND (SC), brown (10YR 5/3), moist.	SC	
5			0		▼ Grayish brown (10YR 5/2), wet, little gravel.		
			0		▼ Moist.		
10			0		▼ Moist to very moist, 60% fine-grained sand, 40% clay.		
					Silty CLAY with SAND (Bay Mud-CL), black (N 2.5/), moist to wet, some organic material.	CL	
					— ? — ? — ? —		
15			0		Clayey SAND (SC), light olive brown (2.5Y 5/4), wet, 70% fine-grained sand, 30% clay.	SC	
			0		Silty CLAY with SAND (Bay Mud-CL), black (N2.5/), moist to very moist.	CL	
20					TD: 17.0 ft bgs Note: Temporary well screen inserted in boring, 1.5 inches of water in bottom of boring. Grab groundwater sample collected at 11:20, DTW 4.4 ft bgs.		

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LOG OF BORING B-1
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

3

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (15 ft south of former UST)				ELEVATION AND DATUM Ground Surface		BORING NO. B-2	
DRILLING AGENCY Clear Heart Drilling, LLC		DRILLER Ian		DATE STARTED 9 Nov 98		DATE FINISHED 9 Nov 98	
DRILLING EQUIPMENT DR 10K Truck mounted rig				COMPLETION DEPTH 15.0'		SAMPLER Split Spoon	
DRILLING METHOD Direct Push		BORING DIA. 2 inches		NO. OF SAMPLES 2 Soil + 1 Grab Groundwater			
SIZE AND TYPE OF CASING —NA—		FROM — TO —		WATER LEVEL FIRST 5' and 11' bgs		BEFORE SAMPLE 5.6' bgs	
TYPE OF PERFORATION —NA—		FROM — TO —		CORE BARREL 2.0 inch ϕ		LENGTH 18 or 24 inches	
SIZE AND TYPE OF PACK —NA—		FROM — TO —		LOGGED BY: JC		CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 —NA—		FROM — TO —		COMMENTS Soil samples field screened with GasTector Combustion Meter (GT). Results reported in parts per million (ppm).	
		NO. 2 —NA—		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	GT	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
0					Concrete - 4 inches, Base rock fill - 6 inches		
5			0		Clayey SAND (SC), brown (10YR 5/3), moist. ▽ Dark gray (2.5Y 4/1), wet. ▽ Moist.	SC	
10			0		▽ Light olive brown, moist to wet, 60% fine- to coarse-grained sand, 25% clay, 15% gravel to 3/4 in. Silty CLAY with SAND (Bay Mud-CL), black (N 2.5/), very moist, some organic material.	CL	
15					TD: 15.0 ft bgs Note: Grab groundwater sample collected directly from boring at 10:55, DTW 5.6 ft.		
20							

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LOG OF BORING B-2
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

4

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (15 ft north of former UST)				ELEVATION AND DATUM Ground Surface		BORING NO. B-3	
DRILLING AGENCY Clear Heart Drilling, LLC		DRILLER Ian		DATE STARTED DATE FINISHED 9 Nov 98 → 9 Nov 98			
DRILLING EQUIPMENT DR 10K Truck mounted rig				COMPLETION DEPTH 6.0'		SAMPLER NA	
DRILLING METHOD Direct Push		BORING DIA. 2 inches		NO. OF SAMPLES 1 Liquid Sample			
SIZE AND TYPE OF CASING —NA—		FROM — TO —		WATER LEVEL FIRST 5' bgs		BEFORE SAMPLE 5' bgs	
TYPE OF PERFORATION —NA—		FROM — TO —		CORE BARREL NA		LENGTH NA	
SIZE AND TYPE OF PACK —NA—		FROM — TO —		LOGGED BY: JC		CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 —NA—		FROM — TO —		COMMENTS 35% LEL detected in air at about 1 ft bgs in soil boring	
		NO. 2 —NA—		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	GT	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
5	↓				Asphalt - 2 inches, Base rock fill - 6 inches		
					Clayey SAND (SC), brown (10YR 5/3), moist.	SC	
					▼ Ten inches of brownish black oily liquid which appeared to be free product. TD: 6.0 ft bgs Note: Sample of liquid collected for product identification.	Product Level → ▽	
10							
15							
20							

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LOG OF BORING B-3
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

5

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (11 ft east of former UST)				ELEVATION AND DATUM Ground Surface		BORING NO. B-4	
DRILLING AGENCY Clear Heart Drilling, LLC			DRILLER Ian		DATE STARTED DATE FINISHED 9 Nov 98 → 9 Nov 98		
DRILLING EQUIPMENT DR 10K Truck mounted rig				COMPLETION DEPTH 7.0'		SAMPLER Split Spoon	
DRILLING METHOD Direct Push			BORING DIA. 2 inches		NO. OF SAMPLES 1 Soil + 1 Grab Groundwater		
SIZE AND TYPE OF CASING —NA—			FROM — TO —		WATER LEVEL FIRST 3' bgs		BEFORE SAMPLE 15 inches bgs
TYPE OF PERFORATION —NA—			FROM — TO —		CORE BARREL 2.0 inch ϕ		LENGTH 24 inches
SIZE AND TYPE OF PACK —NA—			FROM — TO —		LOGGED BY: JC		CHECKED BY: CYP
TYPE OF SEAL		NO. 1 —NA—		FROM — TO —		COMMENTS	
		NO. 2 —NA—		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	GT	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt - 1 inch, Base rock fill - 6 inches		
					Clayey SAND with GRAVEL (SC), light olive brown (2.5Y 5/4), very moist.	SC	
					▼ Wet.		
5					▼ Moist, less gravel, more clay.		
					▼ Damp.		
					TD: 7.0 ft bgs Note: Grab groundwater sample collected at 12:55, DTW 15 inches.		
10							
15							
20							

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LOG OF BORING B-4
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

6

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (75 ft west of former UST)		ELEVATION AND DATUM Ground Surface		BORING NO. B-5	
DRILLING AGENCY Clear Heart Drilling, LLC		DRILLER Ian		DATE STARTED DATE FINISHED 9 Nov 98 → 9 Nov 98	
DRILLING EQUIPMENT DR 10K Truck mounted rig		COMPLETION DEPTH 17.0'		SAMPLER Split Spoon	
DRILLING METHOD Direct Push		BORING DIA. 2 inches		NO. OF SAMPLES 3 Soil + 1 Grab Groundwater	
SIZE AND TYPE OF CASING —NA—		FROM — TO —		WATER LEVEL FIRST 10' bgs	
TYPE OF PERFORATION —NA—		FROM — TO —		CORE BARREL 2.0 inch ϕ	
SIZE AND TYPE OF PACK —NA—		FROM — TO —		LOGGED BY: JC	
TYPE OF SEAL		NO. 1 —NA—		FROM — TO —	
		NO. 2 —NA—		FROM — TO —	
COMMENTS Soil samples field screened with GasTector Combustion Meter (GT). Results reported in parts per million (ppm).					

DEPTH (feet)	Samples	Sample ID	GT	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt - 3 inches, Base rock fill - 4 inches		
					Clayey SAND (SC), light olive brown (2.5Y 5/4), slightly moist.	SC	
5			0		▼ Gray (2.5Y 6/1), very moist.		
					▼ Light olive brown (2.5Y 1/4), some gravel to 3/4 inch.		
10			0		▼ Wet.		
					Silty CLAY with SAND and GRAVEL (Bay Mud-CL), very dark gray (N 3/) with grayish-green mottling, very moist, some organic material, some gravel to 3/4 inch.	CL	
15			0				
20					TD: 17.0 ft bgs Note: Temporary well screen inserted in boring, grab groundwater sample collected at 16:03, DTW 5 ft bgs.		

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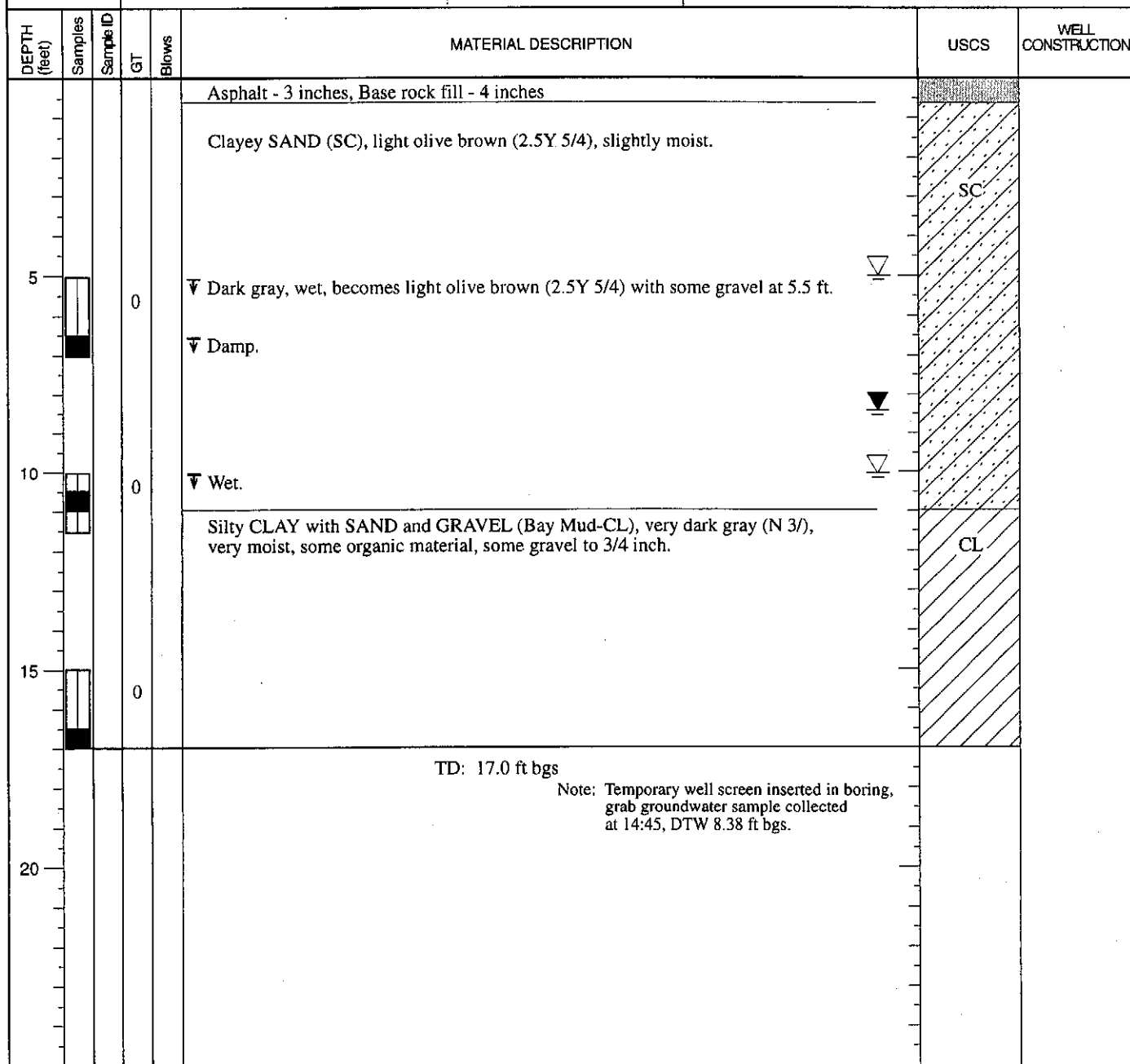
LOG OF BORING B-5
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

7

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd, Novato Ford (75 ft north of former UST)		ELEVATION AND DATUM Ground Surface		BORING NO. B-6
DRILLING AGENCY Clear Heart Drilling, LLC	DRILLER Ian	DATE STARTED 9 Nov 98	DATE FINISHED 9 Nov 98	
DRILLING EQUIPMENT DR 10K Truck mounted rig		COMPLETION DEPTH 17.0'	SAMPLER Split Spoon	
DRILLING METHOD Direct Push	BORING DIA. 2 inches	NO. OF SAMPLES 3 Soil + 1 Grab Groundwater		
SIZE AND TYPE OF CASING —NA—	FROM — TO —	WATER LEVEL FIRST 5' and 10' bgs	BEFORE SAMPLE 8.38' bgs	
TYPE OF PERFORATION —NA—	FROM — TO —	CORE BARREL 2.0 inch ϕ	LENGTH 18 or 24 inches	
SIZE AND TYPE OF PACK —NA—	FROM — TO —	LOGGED BY: JC	CHECKED BY: CYP	
TYPE OF SEAL	NO. 1 —NA—	FROM — TO —	COMMENTS Soil samples field screened with GasTector Combustion Meter (GT). Results reported in parts per million (ppm).	
	NO. 2 —NA—	FROM — TO —		



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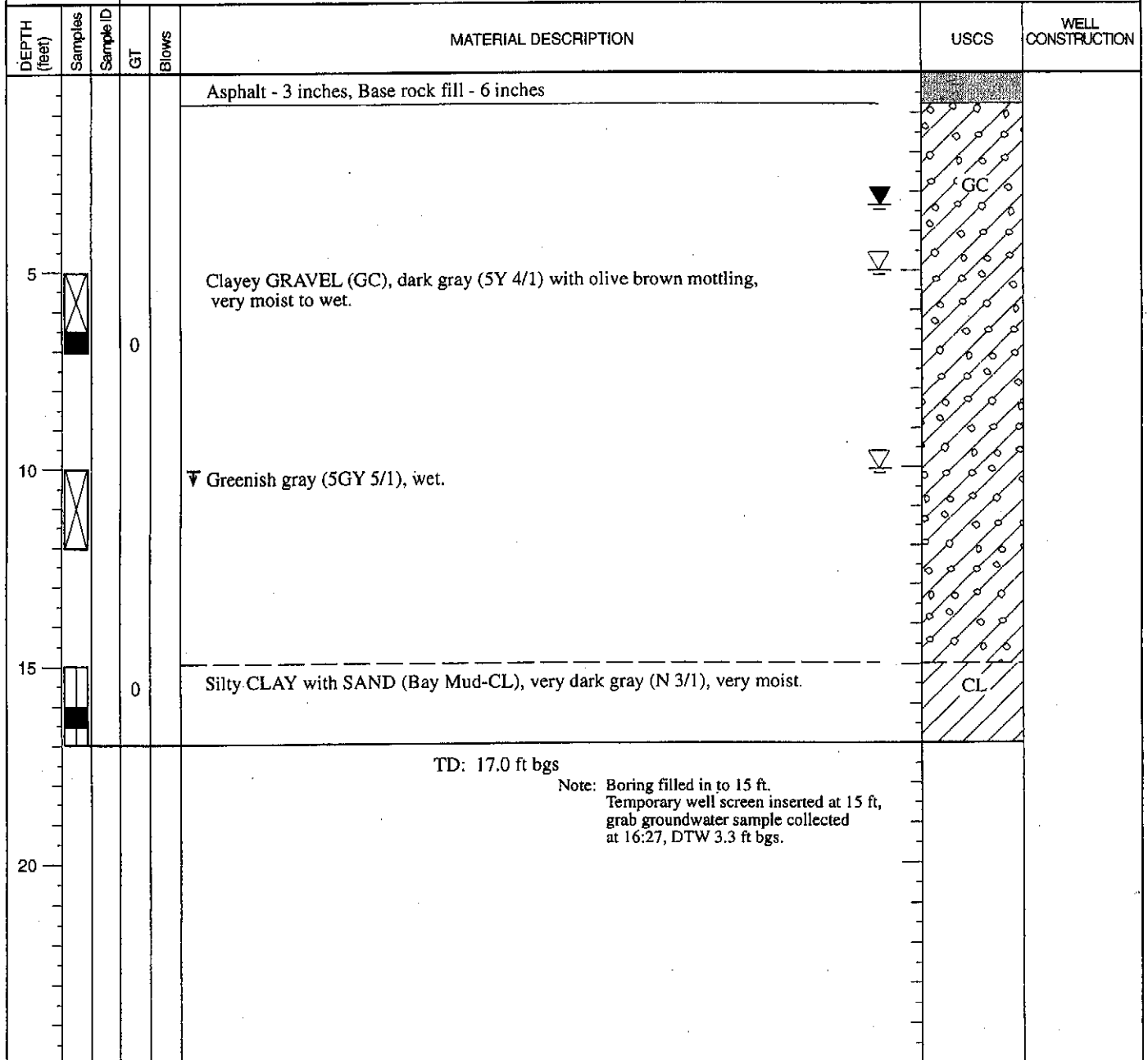
LOG OF BORING B-6
Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

8

JOB NUMBER 0306,001.97	REVIEWED BY John Calomiris	DATE January 99	REVISED	SHEET NO. 1 of 1
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BORING LOCATION		6995 Redwood Blvd, Novato Ford (40 ft west of former UST)		ELEVATION AND DATUM		Ground Surface		BORING NO.		B-7	
DRILLING AGENCY		Clear Heart Drilling, LLC		DRILLER		Ian		DATE STARTED		9 Nov 98	
DRILLING EQUIPMENT		DR 10K Truck mounted rig		DATE FINISHED		9 Nov 98		COMPLETION DEPTH		17.0'	
DRILLING METHOD		Direct Push		BORING DIA.		2 inches		NO. OF SAMPLES		2 Soil + 1 Grab Groundwater	
SIZE AND TYPE OF CASING		—NA—		FROM		TO		WATER LEVEL		FIRST 5' and 10' bgs	
TYPE OF PERFORATION		—NA—		FROM		TO		CORE BARREL		2.0 inch ϕ	
SIZE AND TYPE OF PACK		—NA—		FROM		TO		LOGGED BY:		JC	
TYPE OF SEAL		NO. 1 —NA—		FROM		TO		CHECKED BY:		CYP	
TYPE OF SEAL		NO. 2 —NA—		FROM		TO		COMMENTS			
								Soil samples field screened with GasTechtor Combustion Meter (GT). Results reported in parts per million (ppm).			



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LOG OF BORING B-7
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE
 9

JOB NUMBER	0306,001.97	REVIEWED BY	John Calomiris	DATE	January 99	REVISED		SHEET NO.	1 of 1
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BORING LOCATION 6995 Redwood Blvd. (west side of Hill Road near curb)		ELEVATION AND DATUM Ground level		BORING NO. B-8
DRILLING AGENCY Clear Heart, LLC	DRILLER Rick	DATE STARTED 2 Dec 99	DATE FINISHED 2 Dec 99	
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig		COMPLETION DEPTH 16.5 ft	SAMPLER CA Modif. Split Spoon	
DRILLING METHOD Solid Flight Auger	BORING DIA. 4 inch O.D.	NO. OF SAMPLES 3 Soil and 1 Grab Groundwater		
SIZE AND TYPE OF CASING ---	FROM --- TO ---	WATER LEVEL ---	FIRST 6.0 ft bgs	MEASURED / SAMPLED 6.5 ft bgs
TYPE OF PERFORATION ---	FROM --- TO ---	CORE BARREL 2.5" ϕ	LENGTH 18 inches	
SIZE AND TYPE OF PACK ---	FROM --- TO ---	LOGGED BY: JC	CHECKED BY: CYP	
TYPE OF SEAL	NO. 1 ---	FROM --- TO ---	COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
	NO. 2 ---	FROM --- TO ---		

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt and base rock.		
					SILTY SAND (SM) with clay, dark yellowish brown (10YR 4/4), moist.	SM	
					SAND (SP), light olive brown (2.5Y 5/3), moist, 90% fine-grained sand, 10% fines.	SP	
5		6.0	0	2	Very loose, wet.		
10		11.0	0	3	SILTY CLAY (CL), dark gray (N4 /), moist, soft, 70% clay, 30% silt.	CL (Bay Mud)	
15		16.5	0	5			
20					TD: 16.5 ft bgs Note: Groundwater sample B-8(w) collected 0930 hr, DTW 6.5 ft bgs.		

(TRACE #179/RG/9/Mar00)

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LOG OF SOIL BORING B-8
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

 PLATE
 4

JOB NUMBER 0306,001.97	REVIEWED BY EC&A, Cheri Page	DATE February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd. (northwest corner of lot)		ELEVATION AND DATUM Ground level		BORING NO. B-9	
DRILLING AGENCY Clear Heart, LLC		DRILLER Rick		DATE STARTED 2 Dec 99 → 2 Dec 99	
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig		COMPLETION DEPTH 16.5 ft		SAMPLER CA Modif. Split Spoon	
DRILLING METHOD Solid Flight Auger		BORING DIA. 4 inch O.D.		NO. OF SAMPLES 3 Soil and 1 Grab Groundwater	
SIZE AND TYPE OF CASING —		FROM — TO —		WATER LEVEL FIRST 14.0 ft bgs	
TYPE OF PERFORATION —		FROM — TO —		MEASURED / SAMPLED 6.8 ft bgs	
SIZE AND TYPE OF PACK —		FROM — TO —		CORE BARREL 2.5" φ	
TYPE OF SEAL		LOGGED BY: JC		CHECKED BY: CYP	
NO. 1 —		FROM — TO —		COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
NO. 2 —		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt, base rock, and fill.		
5		6.5	0	12	CLAYEY SAND (SC), pale yellow (2.5Y 0/3), damp, 60% fine-grained sand, 40% clay; becomes light olive gray at 4 ft. Perched water (very little at 5 ft).	SC	
					CLAYEY GRAVEL (GC), dark olive gray (5Y 3/2), moist, stiff, 60% gravel, 30% clay, 10% fine-grained sand.	GC	
10		11.0	0	3	CLAY (CL) with sand, very dark gray (5Y 3/1), moist, soft, 80% clay, 20% fine-grained sand. ▼ Brown mottling, very moist, organic material.	CL (Bay Mud)	
15		16.0	0		SILTY SAND (SM), very dark gray (5Y 3/1), wet, 80% fine- to coarse-grained sand, 20% silt.	SM	
20					TD: 16.5 ft bgs Note: Temporary well screen inserted into boring. Groundwater sample B-9(w) collected 1111 hr, DTW 6.8 ft bgs.		

(TRACE #179/RG/9Mar00)

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LOG OF SOIL BORING B-9
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

5

JOB NUMBER 0306,001.97	REVIEWED BY EC&A, Cheri Page	DATE February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION		6995 Redwood Blvd. (northeast corner of detail shop)		ELEVATION AND DATUM		Ground level		BORING NO. B-10	
DRILLING AGENCY		Clear Heart, LLC		DRILLER		Rick		DATE STARTED DATE FINISHED	
								2 Dec 99 → 2 Dec 99	
DRILLING EQUIPMENT		DR 10K Truck-mounted Drill Rig		COMPLETION DEPTH		16.5 ft		SAMPLER CA Modif. Split Spoon	
DRILLING METHOD		Solid Flight Auger		BORING DIA.		4 inch O.D.		NO. OF SAMPLES	
								3 Soil and 1 Grab Groundwater	
SIZE AND TYPE OF CASING		—		FROM — TO —		WATER LEVEL		FIRST 14.0 ft ?	
								MEASURED / SAMPLED 14.3 ft bgs	
TYPE OF PERFORATION		—		FROM — TO —		CORE BARREL		2.5" φ	
								LENGTH 18 inches	
SIZE AND TYPE OF PACK		—		FROM — TO —		LOGGED BY:		JC	
								CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 —		FROM — TO —		COMMENTS		Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
		NO. 2 —		FROM — TO —					

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt and base rock.		
5		6.5		41	CLAYEY SAND (SC), light olive brown (2.5Y 5/6), damp, 70% fine-grained sand, 30% clay. ▽ Very little perched water at 5 ft bgs.	SC	
10		11.0		7	GRAVELLY CLAY (CL), light olive brown (2.5Y 5/6), damp, very stiff, 50% clay, 30% gravel (gravel lens at 6.5 ft), 20% fine-grained sand.	CL	
					Clay (CL), very dark gray (5Y 3/1), moist, medium stiff.	CL (Bay Mud)	
15		16.0			▽ Dark gray (N4 /) with olive brown mottling, organic material.		
20					TD: 16.5 ft bgs Note: Temporary well screen inserted into boring. Groundwater sample B-10(w) collected 1530 hr, DTW 14.3 ft bgs, very little water.		

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LOG OF SOIL BORING B-10

Novato Ford
6995 Redwood Boulevard
Novato, California

PLATE

6

JOB NUMBER	0306,001.97	REVIEWED BY	EC&A, Cheri Page	DATE	February 2000	REVISED		SHEET NO. 1 of 1
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TRACE #179/RG/9Mar00

BORING LOCATION 6995 Redwood Blvd. (northwest corner of lot)				ELEVATION AND DATUM Ground level		BORING NO. B-11	
DRILLING AGENCY Clear Heart, LLC		DRILLER Rick		DATE STARTED DATE FINISHED 2 Dec 99 → 2 Dec 99			
DRILLING EQUIPMENT DR 10K Truck-mounted Drill Rig				COMPLETION DEPTH 16.5 ft		SAMPLER CA Modif. Split Spoon	
DRILLING METHOD Solid Flight Auger		BORING DIA. 4 inch O.D.		NO. OF SAMPLES 2 Soil and 1 Grab Groundwater			
SIZE AND TYPE OF CASING —		FROM — TO —		WATER LEVEL FIRST 10.0 ft bgs		MEASURED / SAMPLED 8.0 ft bgs	
TYPE OF PERFORATION —		FROM — TO —		CORE BARREL 2.5" φ		LENGTH 18 inches	
SIZE AND TYPE OF PACK —		FROM — TO —		LOGGED BY: JC		CHECKED BY: CYP	
TYPE OF SEAL		NO. 1 —		FROM — TO —		COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm). Blows by 40 lb hammer, 40 inch drop.	
		NO. 2 —		FROM — TO —			

DEPTH (feet)	Samples	Sample ID	PID	Blows	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Asphalt and base rock.		
					SANDY CLAYEY GRAVEL (GM). [Fill]	GM	
5		6.5	0	33	CLAYEY GRAVEL (GC), light olive brown (2.5Y 5/4), damp, dense, 50% gravel, 30% clay, 20% fine-grained sand. ▼ Perched water (very little) at 5 ft. Moist.	GC	
10		11.0	0		CLAY (CL), very dark gray (5Y 3/1) with black mottling, wet, organic material.	CL (Bay Mud)	
15			0				
20					TD: 16.5 ft bgs Note: Groundwater sample B-11(w) collected 1745 hr from open boring, DTW 8.0 ft bgs.		

(TRACE #179/RG/Mar00)

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LOG OF SOIL BORING B-11
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

7

JOB NUMBER 0306,001.97	REVIEWED BY EC&A, Cheri Page	DATE February 2000	REVISED	SHEET NO. 1 of 1
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BORING LOCATION				6995 Redwood Blvd. (NW edge of Hill Rd, 9 ft to sidewalk)		ELEVATION AND DATUM		Ground Surface		BORING NO. B-12			
DRILLING AGENCY				Clear Heart, Inc.		DRILLER		Don		DATE STARTED DATE FINISHED 01 Apr 03 → 01 Apr 03			
DRILLING EQUIPMENT				Deep Rock DR10K Truck-Mounted Rig		COMPLETION DEPTH		11.5 ft		SAMPLER CA Modified Split Spoon			
DRILLING METHOD				Solid Flight Auger		BORING DIA.		4 inches O.D.		NO. OF SAMPLES 2 Soil, 1 Grab Groundwater			
SIZE AND TYPE OF CASING				FROM — TO —		WATER LEVEL		FIRST ~11 ft		MEASURED / SAMPLED DTW 11 ft			
TYPE OF PERFORATION				FROM — TO —		CORE BARREL		2.0 inch φ		LENGTH 18 inches			
SIZE AND TYPE OF PACK				FROM — TO —		LOGGED BY:		EAC		CHECKED BY: RWE			
TYPE OF SEAL		NO. 1		FROM — TO —		COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm).							
		NO. 2		FROM — TO —									
DEPTH (feet)	Samples	Sample ID	Blows	PID (ppm)	MATERIAL DESCRIPTION						USCS	WELL CONSTRUCTION	
5			6.5	12	0	SANDY CLAY (CL) with Gravel, dark yellowish-brown (10YR 4/6), wet; ~55% clay, ~30% fine- to coarse-grained sand, ~15% angular gravel up to 0.75 inch dia. [Fill]						CL	
10			11.0	8	0	SILTY CLAY (OH) with Sand, greenish-black (GLEY-1 5GY), saturated, very soft; ~50% clay, ~45% silt, ~5% fine-grained sand; organic rich. ▼ ▼						OH	
15						TD: 11.5 ft bgs Note: Grab groundwater sample collected at ~11 ft bgs at 1030 hr.							
20													

(TRACE #342/RG/08Apr03)

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 ENVIRONMENTAL CONSULTANTS

LOG OF SOIL BORING B-12
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

3

JOB NUMBER	0306, 001.97	REVIEWED BY	EC&A, Elizabeth Carruth	DATE	April 2003	REVISED		SHEET NO.	1 of 1
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BORING LOCATION 6995 Redwood Blvd. (~150 ft SW of MW-3, 10.5 ft to sidewalk)				ELEVATION AND DATUM Ground Surface		BORING NO. B-13		
DRILLING AGENCY Clear Heart, Inc.			DRILLER Don		DATE STARTED 01 Apr 03		DATE FINISHED 01 Apr 03	
DRILLING EQUIPMENT Deep Rock DR10K Truck-Mounted Rig				COMPLETION DEPTH 15.0 ft		SAMPLER CA Modified Split Spoon		
DRILLING METHOD Solid Flight Auger			BORING DIA. 4 inches O.D.		NO. OF SAMPLES 2 Soil, 1 Grab Groundwater			
SIZE AND TYPE OF CASING —			FROM — TO —		WATER LEVEL FIRST NA		MEASURED / SAMPLED DTW 12.5 ft	
TYPE OF PERFORATION —			FROM — TO —		CORE BARREL 2.0 inch ϕ		LENGTH 18 inches	
SIZE AND TYPE OF PACK —			FROM — TO —		LOGGED BY: EAC		CHECKED BY: RWE	
TYPE OF SEAL		NO. 1 —		FROM — TO —		COMMENTS Soil samples field screened with Photo-Ionization Detector (PID), results in parts per million (ppm).		
		NO. 2 —		FROM — TO —				
DEPTH (feet)	Samples	Sample ID	Blows	PID (ppm)	MATERIAL DESCRIPTION		USCS	WELL CONSTRUCTION
5		6.0	27	0	CLAYEY GRAVEL (GC) with Sand, light olive-brown (2.5Y 5/6), moist; ~50% angular gravel up to 1.5 inch dia., ~30% clay, ~20% fine- to coarse-grained sand [Fill]		GC	
10		11.0	4	0	SILTY CLAY (OH), greenish-black (GLEY-1 5GY), saturated, very soft; ~60% clay, ~40% silt; organic rich.		OH	
15					TD: 15.0 ft bgs Note: Temporary well screen installed, grab groundwater sample collected at ~12.5 ft bgs at 1535 hr.			
20								

(TRACE #342/RG/29Apr03)

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LOG OF SOIL BORING B-13
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

PLATE

4

JOB NUMBER 0306, 001.97	REVIEWED BY EC&A, Elizabeth Carruth	DATE April 2003	REVISED	SHEET NO. 1 of 1
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BORING LOCATION 6995 Redwood Blvd. (~120 ft SE of MW-3, 4 ft to sidewalk)			ELEVATION AND DATUM Ground Surface		BORING NO. B-14
DRILLING AGENCY Clear Heart, Inc.		DRILLER Don		DATE STARTED 01 Apr 03	DATE FINISHED 01 Apr 03
DRILLING EQUIPMENT Deep Rock DR10K Truck-Mounted Rig			COMPLETION DEPTH 11.5 ft	SAMPLER CA Modified Split Spoon	
DRILLING METHOD Solid Flight Auger		BORING DIA. 4 inches O.D.		NO. OF SAMPLES 2 Soil, 1 Grab Groundwater	
SIZE AND TYPE OF CASING		FROM	TO	WATER LEVEL FIRST ~8 ft	MEASURED / SAMPLED DTW 4.5 ft
TYPE OF PERFORATION		FROM	TO	CORE BARREL 2.0 inch ϕ	LENGTH 18 inches
SIZE AND TYPE OF PACK		FROM	TO	LOGGED BY: EAC	CHECKED BY: RWE
TYPE OF SEAL	NO. 1	FROM	TO	COMMENTS Soil samples field screened with Photo-ionization Detector (PID), results in parts per million (ppm).	
	NO. 2	FROM	TO		

DEPTH (feet)	Samples	Sample ID	Blows	PID (ppm)	MATERIAL DESCRIPTION	USCS	WELL CONSTRUCTION
					Approx. 3 inches of asphalt.		
5		6.0	20	0	SANDY CLAY (CL) with Gravel, light olive-brown (2.5Y 5/4), very moist to wet, medium dense; ~50% clay, ~30% fine- to coarse-grained sand, ~20% angular gravel up to 1.0 inch dia. [Fill]	CL	
10		11.0	4	0	SILTY CLAY (OH) with Sand, greenish-black (GLEI-1 5GY), saturated, very soft; ~50% clay, ~45% silt, ~5% fine-grained sand; strong organic odor.	OH	
15					TD: 11.5 ft bgs Note: Grab groundwater sample collected at ~4.5 ft bgs at 0925 hr.		
20							

(TRACE #342RG/08Apr03)

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 ENVIRONMENTAL CONSULTANTS

LOG OF SOIL BORING B-14
 Novato Ford
 6995 Redwood Boulevard
 Novato, California

 PLATE
5

JOB NUMBER 0306, 001.97	REVIEWED BY EC&A, Elizabeth Carruth	DATE April 2003	REVISED	SHEET NO. 1 of 1
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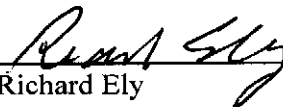
APPENDIX B

Site Safety Plan

A. GENERAL INFORMATION

Site Location: 6995 Redwood Boulevard, Novato, California

Plan Prepared By:


Richard Ely
Senior Geologist

Date: July 19, 2005

Scope of Work: The purpose of the proposed remediation is to clean up fuel hydrocarbon- (FHC-) impacted groundwater in the vicinity of the underground storage tank (UST) formerly located at the site. The remedial action alternative selected for the site is ozone microsparging. Twenty soil borings will be drilled at the site, and sparge points will be installed in the borings. Site remediation will then be facilitated by installing one 6-well and one 12-well KVA C-Sparger™ panels plumbed to the sparge points to introduce ozone microbubbles into the subsurface to chemically break down the FHCs into carbon dioxide and water.

Proposed Date of Investigation: Following RAP approval

Background Review: Complete: **X** Preliminary:Documentation/Summary: Overall Hazard: Serious: Moderate: Low: **X**
Unknown:**B. SITE WASTE CHARACTERISTICS**Waste Type(s): Liquid: **X** (water) Solid: **X**(soil) Sludge: Gas:Characteristic(s): Corrosive: Ignitable: Radioactive: Volatile: **X**
Toxic: Reactive: Unknown Other (name): Flammable

Facility Description: Automobile dealership.

Principle Disposal Method (type and location): Water from drilling and sampling equipment decontamination activities will be placed into covered, labeled, 55-gallon drums. Soil from drilling activities will either be stored in 55-gallon drums or stockpile on and covered with plastic sheeting. The drums will be stored onsite pending later disposal. Subsequent remediation by ozone sparging does not generate wastes requiring offsite disposal.

Unusual Features (power lines, terrain, utilities, etc.): None

STATUS: Active: **X** Inactive: Unknown:

HISTORY: (Agency Action, Complaints, Injuries, etc.): One 2000-gallon, tar-wrapped steel UST for gasoline was removed from the site in September 1997. A preliminary site investigation was conducted at the site in September 1998. To further define the extent of contamination in the vicinity of the former UST, an additional soil and groundwater investigation was conducted and three monitoring and one extraction wells installed in December 1999. A soil boring and CPT investigation was conducted on April 1, 2 and 3, 2003. Approximately 220 gallons of free-floating product and FHC-impacted water were removed from extraction well MW-4 from July 2000 to December 2003. FHC-contaminated soil is limited to the vicinity of the former UST location. The lateral extent of the MTBE plume in

shallow groundwater is constrained in each direction, except offsite to the north in the vicinity of MW-1, which is located approximately 120 ft to the north of the former UST. EC&A's April 30, 2004 *Feasibility Study/Corrective Action Plan* recommended ozone microsparging as the most cost-effective and technically feasible alternative that would achieve the remediation goals in an acceptable length of time. In their letter dated October 21, 2004, the SFBRWQCB agreed with EC&A's recommendation and requested a detailed RAP addressing the design and installation of the ozone microsparging system. This SSP will be submitted to the SFBRWQCB with the RAP.

C. HAZARD EVALUATION

Chemical Name	Description	Threshold Limit Values (TLVs)		Persons Exposed and Potential Routes of Exposure	Symptoms of Acute Exposure	TLV Basis
		8-hr TLV	Short-term Exposure Limit (STEL)			
Benzene	Carcinogen, aromatic HC	0.5 ppm	2.5 ppm	Inhalation, dermal	Headache, dizziness	Cancer
Toluene	Aromatic HC	50 ppm	—	Inhalation, dermal	Headache, dizziness	Central nervous system (CNS), irritation
Ethylbenzene	Aromatic HC	100 ppm	125 ppm	Inhalation, dermal	Headache, dizziness	Irritation, CNS
Xylenes	Aromatic HC	100 ppm	150 ppm	Inhalation, dermal	Headache, dizziness	Irritation
Gasoline	Flammable liquid	300 ppm	500 ppm	Inhalation, dermal	Headache, dizziness	Irritation, CNS
MTBE	Flammable liquid, Oxygenate	40 ppm	—	dermal, inhalation, ingestion	Headache, dizziness, eye/skin irritation Nausea	Mucus Membrane Irritation, CNS

SPECIAL PRECAUTIONS AND COMMENTS: Follow standard safety procedures for working around heavy equipment. Use caution when in close proximity to the drilling equipment. Equipment should be in good working condition. Use safety glasses when drilling rig is operating and during steam cleaning of drilling equipment. Conduct air monitoring to evaluate respiratory and explosion hazards. There will be no eating, smoking or drinking in drilling areas on the site.

D. SITE SAFETY WORKPLAN

Perimeter Establishment: Map/Sketch Attached: See RAP Site Secured:
 Perimeter Identified: Zone(s) of Contamination Identified:
 Personal Protection:

Level of Protection: A: B: C: D: x

Modifications: Upgrade to level C upon continuous high PID readings in the breathing zone.

Surveillance Equipment and Materials: Instrument: OVM Action Level:
5 ppm

SITE PROCEDURES: Advance twenty soil borings and collect soil samples for logging purposes only and grab-groundwater samples for chemical analysis. Upon completion of drilling, ozone sparge points will be installed in the borings. The soil samples and breathing zone will be screened during drilling with a photoionization detector (PID).

HAZARDS: Proximity to heavy equipment, possible exposure to noxious vapors or explosive conditions and/or flammable petroleum vapors and carcinogens.

LEVEL OF PROTECTION: Equipment to protect the body from contact with chemical hazards has been categorized by the Environmental Protection Agency into levels A, B, C, & D. Level A equipment is used when the highest level of protection is needed; Level D equipment is used when minimum protection is needed. The chemical hazard associated with petroleum hydrocarbons is typically low and Level D protection (see equipment list below) is adequate. In case of high levels of contamination, an upgrade to Level C protection equipment may be advised. Level C and D equipment are listed below.

Level C Equipment

NIOSH/MSHA approved air purifying respirator, chemical resistant clothing, chemical resistant inner and outer gloves, chemical resistant boots with steel toe and shank, safety glasses and hard hat.

Level D Equipment

Coveralls, gloves, chemical resistant boots or shoes with steel toe and shank, safety glasses or chemical splash goggles, and hard hat. Tyvex coveralls and Solvex or equivalent gloves are recommended.

EQUIPMENT REQUIRED FOR THIS PROJECT: Normal work clothing and safety glasses may be worn for site excavation work. Wear neoprene boots if walking in or around waste soils. Surgeon's gloves, neoprene boots, and safety glasses are required when sampling. Upgrade to Level C includes addition of NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges.

A First Aid Kit, fire extinguisher and PID are also required. The PID will be used to monitor soil samples and the air in the breathing zone. Readings above 100 ppm are cause for concern. Continuous reading of >5 ppm above background in the breathing zone require use of 1/2 face respirator. Readings of 100 ppm in the breathing zone require an upgrade to Level C.

DECONTAMINATION PROCEDURES:

Personal: Remove gloves, wash hands; steam clean boots in decontamination area.

Equipment: Steam cleaning of drilling and sampling equipment in the decontamination area. TSP wash of sampler between samples.

FIRST AID: Consultant's vehicle has a first aid kit.

WORK LIMITATIONS (time of day, weather, heat/cold, stress): None

INVESTIGATION-DERIVED MATERIAL DISPOSAL:

Drill cuttings: store in covered, labeled 55-gallon drums or on and covered with plastic sheeting.

Decontamination solutions: store in covered, labeled 55 gallon drums.

E. EMERGENCY INFORMATION

LOCAL RESOURCES:

Ambulance: 911

Hospital Emergency Room: 415-209-1300, 180 Rowland Way, Novato

Poison Control Center: 911

Police: 911

Fire Department: 911

Explosives Unit: 911

Agency Contact: John Jang, SFBRWQCB
(510) 622-2366

SITE RESOURCES:

Water Supply: Yes

Telephone: Yes

Radio: None

Other:

EMERGENCY CONTACT:

Name: Edd Clark & Associates, Inc.

Phone: (707) 792-9500

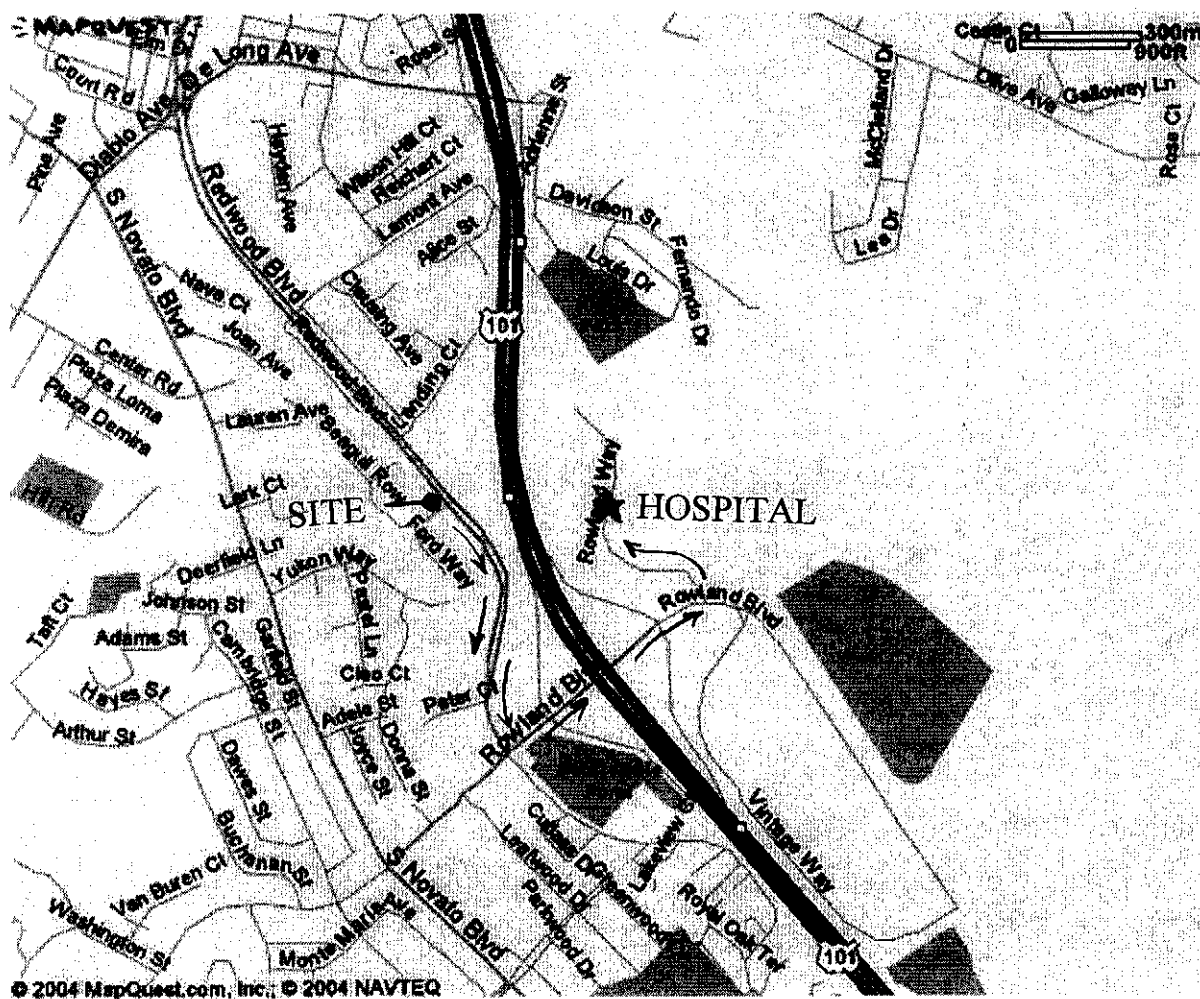
EMERGENCY ROUTE: (Map attached, Figure H)

Go south on Redwood Blvd to Rowland Blvd, turn left, go across Hwy 101,
turn left on Rowland Way

SITE SKETCH: See Figure 2 - Site Plan, attached to RAP

Signature

Date



EDD CLARK & ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

Hospital Map
Novato Community Hospital
180 Rowland Way
Novato, CA 94948-1108

FIGURE

H

JOB NUMBER
0306,001.97

REVIEWED BY
Richard Ely

DATE
November 2004

REVISED DATE